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ABSTRACT

The Technical Chamber (TEE) is the professional organization of Greek engineers as well as the consultant of the Government to technical issues. Besides central services in Athens, TEE has 15 regional sections and most of them have small libraries to serve the local engineering community. All libraries are connected online to TEE network and use an integrated library system installed in Athens. This paper examines the needs and behavior of three types of technical libraries users: User A: remote online user who has online access to library services through the network; User B: remote not online user who communicates by surface mail, telephone, or fax; and User C: visitor of the physical library. A questionnaire was sent to a small number of engineers, containing general questions on the use of computers, Internet, and libraries, to test a service model incorporating the three user types. The paper concludes that the overall issue to be further investigated is the balance between personal and virtual communication among users and staff. (AEF)

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GREEK ENGINEERS AND LIBRARIES IN THE COMING YEARS: A (HUMAN) COMMUNICATION MODEL

ED 433 839

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Introduction

It is important to investigate the information behavior of a particular professional group in order to examine the way they search and use information. Engineers belong to a specific category of scientists, who are also professionals involved in practical things for which they need very simple or very complex pieces of information.

Their information literacy and information seeking and use behavior have been examined in several papers in the literature as well as the similarities and differences among engineers and other scientists. Engineers' professional interests are mainly directed to technology. Technology outputs are products, processes and services, while science "studies problems usually generated internally by logical discrepancies or internal inconsistencies or by anomalous observations that cannot be accounted for within the present intellectual framework".

Taylor has stated important points on engineers' information habits: ".... engineers work within time constraints..... engineers tend to minimize loss than maximize gain when seeking information..." Engineers need a specific answer than a set of documents in which they will have to search for the answer they need.

Another important point is that engineers prefer the most accessible sources than highest quality sources. The proximity to the physical space has often been mentioned in literature, where a positive correlation was found between the physical proximity to an information source and its use.

Accessibility, perceived technical quality and experience with the information channel or source are considered as the basic determinants for engineers in order to gain access to an information channel, following the law of least effort. Similar conclusions are mentioned in an other study, where also technical quality, reliability and relevance are rated by engineers as the criteria to choose an information channel, while accessibility again is the most important criterion, even if the source to be accessed is the least useful. Libraries are not the favorite place for engineers to visit, unless they spend the least time and the least effort in order to get the specific answer they need for their specific problem.

The Technical Chamber of Greece

The Technical Chamber (TEE) is the professional organization of Greek engineers as well as the consultant of the Government to technical issues. It has a technical library in Athens founded at the beginning of 30's with the aim to serve TEE administration bodies as well as engineers all over the country and any other interested in engineering aspects. Besides the central services in Athens, TEE also has 15 regional sections and most of them have small libraries to serve the local engineering community. All libraries are connected online to TEE network and use an integrated library system installed in Athens, although quite a few regional libraries manage to follow the fast automation activities that take place. The reasons may vary:

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lack of staff, unwillingness of the local TEE administration to employ the appropriate staff, unwillingness of local staff to get involved and learn new things.

On the other hand, some interesting and somehow urgent issues arise from the changes taking place everywhere in information areas:

- technology looks like the main direction on which today libraries and their staff have to be interested a lot
- information and data have to reach everywhere, in a friendly and easy to use environment
- people in the libraries must learn how to use the new technology, they have to be trained, to be ready to accept the new situation in order to be able to work in the new (technological) information environment
- users of the libraries must learn how to use the new technology; they have to be trained, to be ready to accept the new situation in order to be able to search in the new (technological) information environment.

So, the issue is not only technology and information on the network but also people. An interesting view has been expressed recently according to which too much discussion is found in literature on the various concepts of the electronic library, where the emphasis is mainly on technology and information resources but much less discussion takes place on human aspects like the role of library staff and library users.

My attempt is to look on these issues as appearing in Greek situation and particularly at the Technical Chamber of Greece, a professional organization that develops an ambitious library system for the satisfaction of the information needs of its members:

- the system has solved the technological problems
- there is a network
- there is an integrated library system
- all bibliographic information of documents physically stored in the libraries can be entered in the union catalogue
- there is the possibility for coordination and cooperation among TEE libraries
- there is the possibility for everyone to have online access to the system
- there is the possibility for every one to borrow documents

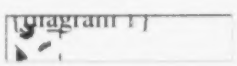
The discussion here is what do engineers need, how do they behave, what do they think on above possibilities, how do they see the changes to come.

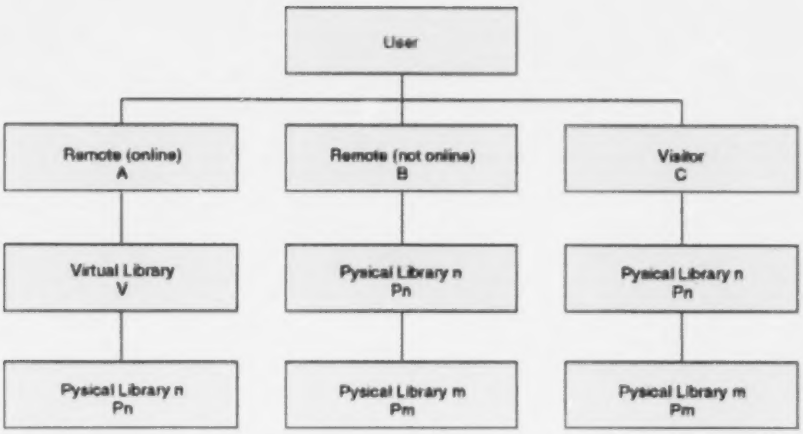
The model

In an attempt to study the needs and behavior of a technical library users like that of the Technical Chamber and the issue of developing virtual library services, 3 types of users are proposed:

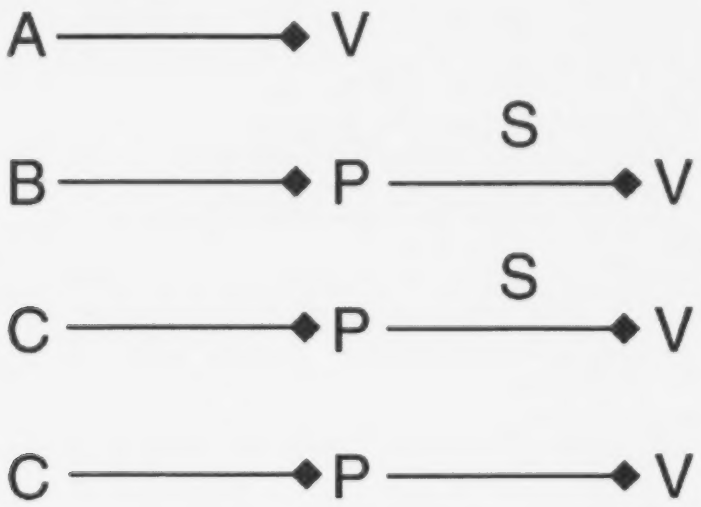
- User A: remote online user - the remote user who has online access to library services through the network
- User B: remote not online user - the remote user who communicates by surface mail, telephone or fax
- User C: visitor of the physical library

The model is presented in the following diagrams:





It is supposed that a number of physical libraries exist (P_i) while a virtual library system (V) has been also established which can serve the users from everywhere. In the above diagrams, only the online user (A) can have a direct access to the virtual library. A case could be:



where S is the library staff.
Users B and C do not have a direct access to the virtual library, but only through the physical library. As we can see, user B will have access through the staff who will do the actual access to the virtual system as there is no online connection for B, while user C can have access from the physical library either with the help of the staff or on his/her own. But at the end, even user A may have a contact with the physical library in order to get some services which may not be offered online (e.g. loan, help etc). So, the flow is better described as following:

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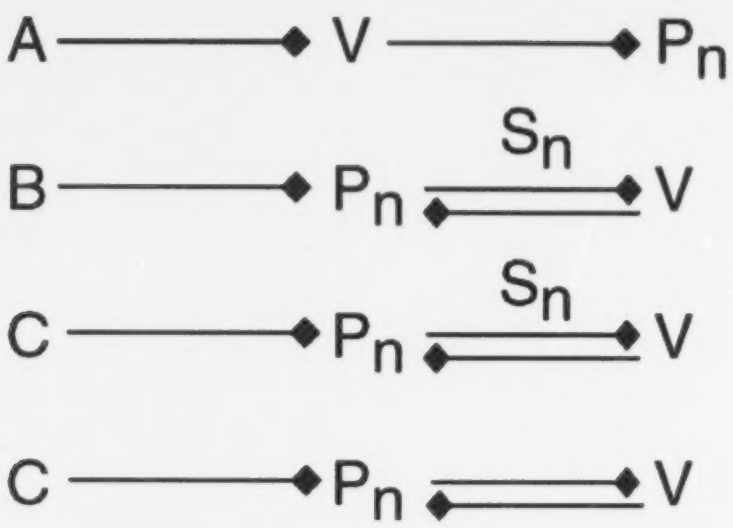

In the above diagrams, one can see that the physical libraries are always used, either as the first step for the user to get information or a step after the virtual library. An interesting point is that either the user starts from a virtual or a physical library and then uses the services of the other, the last point in the model is the physical library.

Preliminary survey

A questionnaire was sent to a small number of engineers containing general queries on the use of computers, Internet and libraries. The sample is quite small because my intention was to test the questionnaire for its content and the coverage of issues I am interested to search as well as the method chosen to evaluate the results but simultaneously to get a preliminary view of Greek engineers' information needs and habits. The purpose of the survey is to test the model described above and proceed to further investigation according to the evaluation of the questionnaire.

There were 26 replies until the deadline set for this presentation, all from Athens (1 architect, 1 surveying engineer, 1 electrical engineer, 3 computer engineers, 3 civil engineers, 4 mechanical engineers, 5 metallurgical engineers and 8 chemical engineers). They have graduated from technical universities in various periods of time (from 1963 to 1996). 7 of them have received a MSc degree and 8 a Phd. 2 of them are professors at the National Technical University, 11 work in the public sector (public services or organizations) and the rest in the private sector (10 of them are free professionals, 2 work in private companies and 1 in the industry).

Among the 26 respondents, only 1 has not access to a computer while 19 have access at home, 24 in the office and 5 have a laptop computer. 19 of them can work in DOS environment, 23 in Windows, 1 in Macintosh and 9 in Unix. Out of 10 free professionals, 9 of them use a computer - 6 at home and 8 in the office.

16 have access to Internet, 11 at home and 15 in the office. 12 have a dial-up access to the network while 7 have access through a leased line (in addition or exclusively). 15 engineers use electronic mail - 8 from the private sector, 5 from the public (out of 11) and 2 from the university. More than half of them use it everyday.

The use of electronic mail for education, research, professional awareness, professional communication, personal use and entertainment was evaluated marking 1-6 for "very useful", "useful", "not important", "not necessary", "do not know", "not involved in this activity". About 15 or 16 responses were received for this

question, including for "useful" or "very useful»: 10 for education, 10 for research, 15 for professional awareness, 16 for professional communication, 11 for personal use and 3 for entertainment. It is clear that professional involvement is the first reason to use electronic mail.

16 of them visit web pages on the Internet, 9 have a telnet access and 10 use the ftp protocol. The evaluation of web pages similar to electronic mail gave the following results for "useful" or "very useful" from an average of 14 total responses: 14 for education, 11 for research, 14 for professional awareness, 12 for professional communication, 10 for personal use and 9 for entertainment.

18 use library services, 10 of them use academic libraries, 13 special libraries (7 of them come from the private sector) while also 4 use libraries of public organizations that can be considered as special libraries as well. In the query, which of the library they have used at least once, they responded:

TEE Library (Athens)	18
National Technical University of Athens Library	12
National Research Foundation Library	9
Eugenides Foundation Library	6
Hellenic-American Library	5
Commercial and Industrial Chamber of Athens Library	4
Demokritos Library	4
Hellenic Standardization Organization Library	4
British Council Library	3
University of Patras Library	3
Public Power Corporation Library	2
Technical University of Xanthi Thrace Library	2
TEE regional library	2
ACM online	1
Aristoteleian University of Thessaloniki Library	1
Department of Agriculture Library	1
Goethe Institute Library	1
National Library	1
Technical University of Crete	1

The first place of TEE library is an important point here as the majority are not coming from the academic sector (8 of them are free professionals). It is also noteworthy that all libraries ranking first are in Athens.

Among the 18 who use the Athens Library of the Technical Chamber, 10 use it often or very often while 5 of those who do not use it do not know what services it provides or do not need it. The services for which TEE library would be useful are: bibliographic research (15), loan (14), Journal articles delivery (9), Current awareness in scientific issues (11), Current Awareness in professional issues (7), Current awareness in TEE activities (4). 10 of them have already ordered photocopies of journal articles. The point here is the smaller number on professional awareness requirements. This issue might be connected with the

existence of TEE Data Bank that is oriented much more on such areas.

8 of them have visited library web pages, 8 electronic journals and 8 digital libraries. A definition of the virtual library was given and the engineers were asked to evaluate it for the various services it might provide. The responses given for important or very important were the following:

Library catalogs (20), Electronic journals (19), Access to bibliographic databases (21), Access to full text digital libraries (21), Description of library services (9), General information for engineers (13), Firms data (12), Legislation for engineers (14), Economic data (13), Journal articles delivery (20), Connection to electronic addresses of engineering associations (15), Connection to electronic addresses of other scientific and professional associations (12), Connection to electronic addresses of general interest (12). When they were asked to reply what they will do if any of the above services is fee-based (they will use in any price, they will use if price is reasonable, they will not use), they looked reluctant to pay and some of them expressed a very negative view for this possibility. TEE is considered as their professional organization that has to provide free library services to its members. One respondent made the comment that the electronic library cannot be an electronic bookshop.
Most of them considered that the virtual library might have positive impact on their job.

For the help they would need in order to access the virtual library services, "highly preferred" or "acceptable" are: printed guides (17), online guides (19), open courses (10), personal communication (17), telephone communication (15).

It is important that only 9 would like the network communication to replace entirely the visit to the physical library. Those who prefer the network communication, support that there will be independence to physical location and time constraints, that visit to physical library costs time and money. The majority however, prefers the personal contact with the library staff and supports that it is easier to retrieve information browsing among the shelves and discussing with the staff or other users who already have such an experience. A computer engineer expressed the view that anything that might waste time would not be useful, even if this is a library in an electronic environment.

Conclusions
The number of the respondents is very small and of course one could say that the present results may not represent the whole image, although my personal experience could confirm most of them. Some points mentioned in bibliography have been also found in the results, like time and location constraints. The method is described and some preliminary results are presented in this paper, with emphasis on engineers as users of electronic library services. Issues that have to be further investigated through a more representative sample are:

- Internet and library use by specialty, place of living and type of work.
- Information needs and behavior (kind of service, fee- or not fee-based etc)
- Study of the 3 types of library users mentioned in the model
- Role of the physical libraries and their staff in the model
- Services provided, communication with the local staff, requirements for the staff
- Role of the Technical Chamber library services on the various engineering groups (academics, free professionals etc)

The overall issue is to investigate the balance between personal and virtual communication among users and staff. We have to study if and/or how the vast progress of technology and information resources electronic management in the coming years will affect the human communication or vice versa. The engineers are a good example, as those having the most direct relation with technology.

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